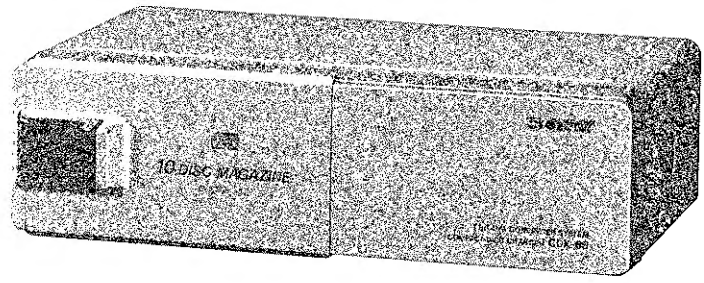
CDX-65/65RF

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model
UK Model



Model Name Using Similar Mechanism	CDX-45
Optical Pic-Up Block Name	KSS-315A

SPECIFICATIONS

System Compact disc digital audio system
Laser Diode Properties
Material: GaAlAs
Wavelength: 780nm
Emission Duration: Continuous
Laser out-put Power: Less than 44.6 µW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block.
Frequency response
CDX-65 5 – 20,000 Hz
Wow and flutter Below measurable limit
Signal-to-noise ratio
CDX-65 92 dB
Outputs Bus(Unilink) control output (8 PIN)
Analog audio output (RCA PIN)
Current drain 800 mA (CD playback)
800 mA (during loading or ejecting a disc)
Operating temperature
–10°C to 55°C (14°F to 131°F)
Dimensions Approx. 305 × 90 × 174 mm (12 1/8 × 3 5/8 × 6 7/8 in.) (w/h/d) not incl. projecting parts and controls
Mass Approx. 2.5 kg (5 lb. 8 oz.)
Power requirement
12 V DC car battery (negative ground)
Supplied accessories
Disc magazine (1)
Mounting hardware (1 set)
Bus(Unilink) cable (1)
RCA pin cord (1)

Design and specifications subject to change without notice.

CDX-65
COMPACT DISC CHANGER
CDX-65RF
COMPACT DISC CHANGER SYSTEM

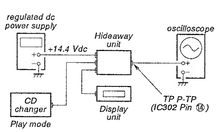
SONY®

HIDEAWAY UNIT

Note: Don't move VR302 on replacing ICs or others.

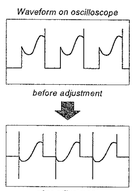
4-3. DC BALANCE ADJUSTMENT

Connection:



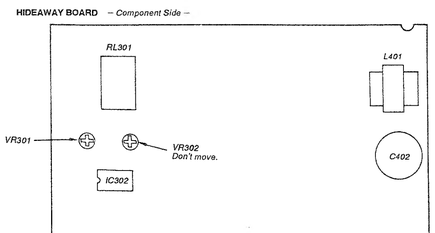
Procedure:

1. Adjust with VR301 so that the 38 kHz signal leakage becomes minimum.



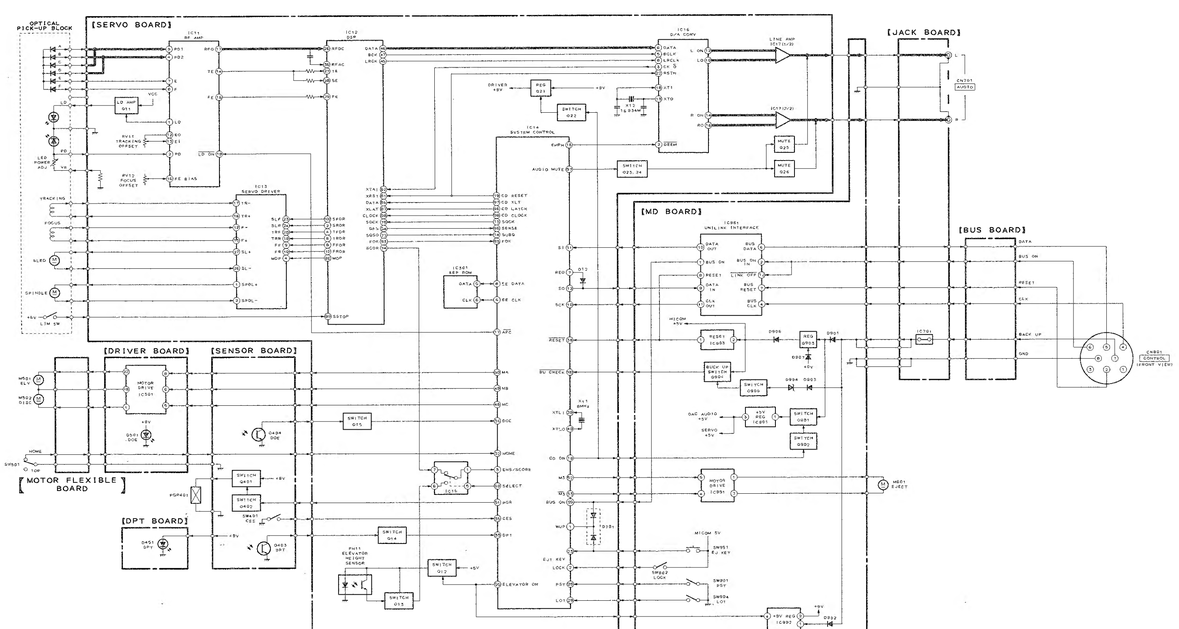
Adjustment Location:

HIDEAWAY BOARD – *Component Side* –

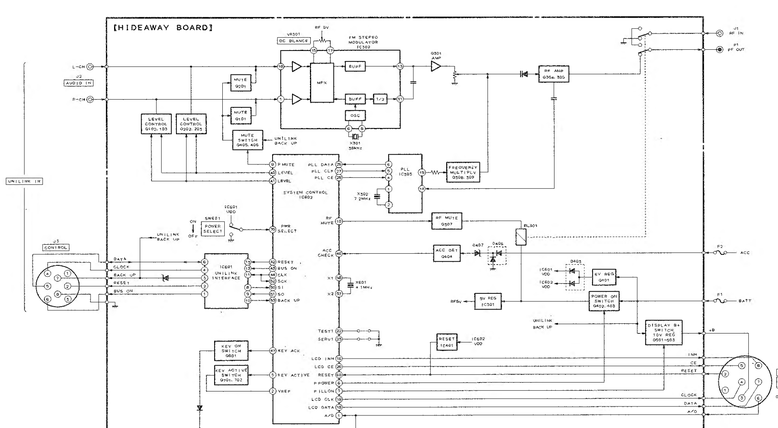


SECTION 5
DIAGRAMS

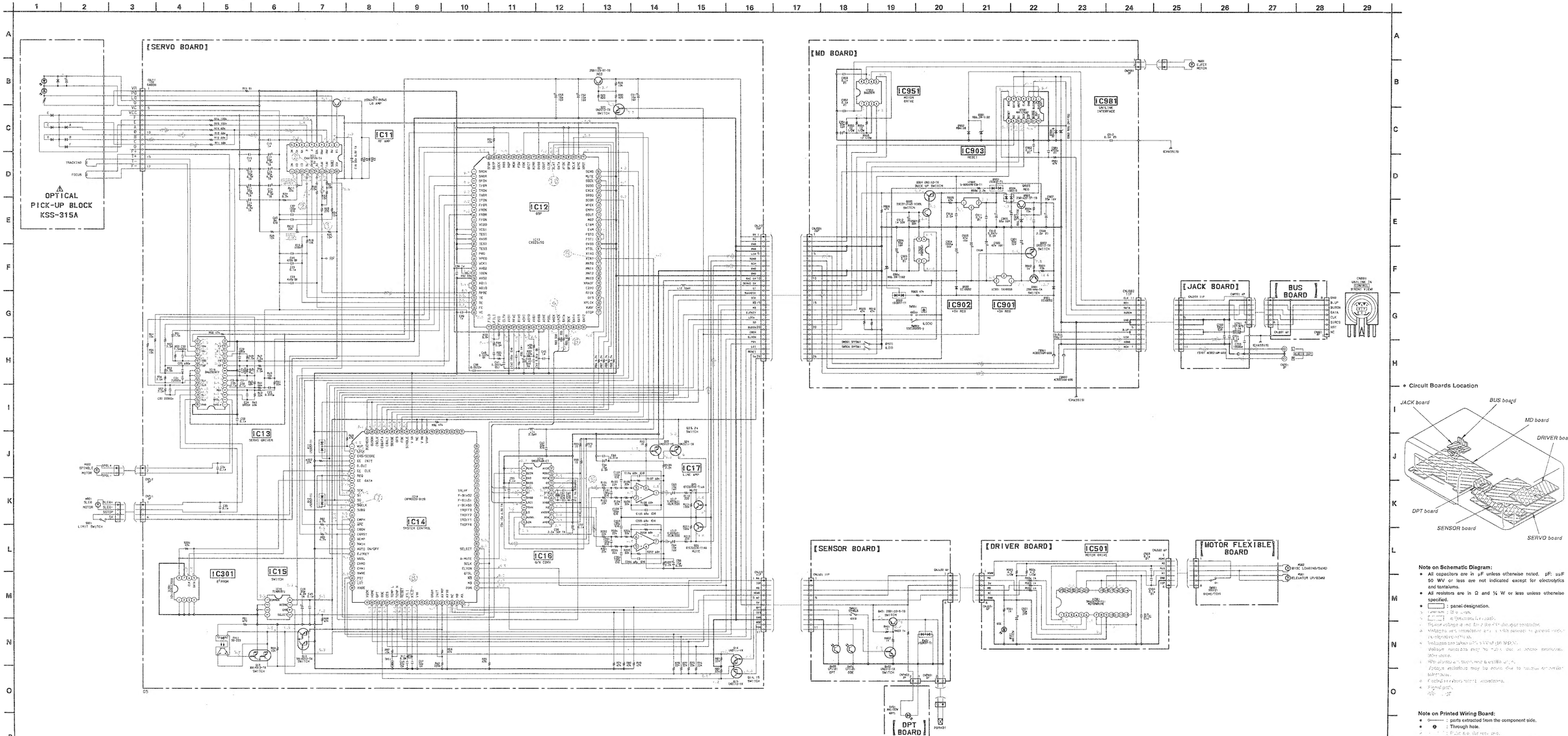
5-1. COMPACT DISC CHANGER SECTION BLOCK DIAGRAM



5-2. HIDEAWAY SECTION BLOCK DIAGRAM



5-3. COMPACT DISC CHANGER SECTION SCHEMATIC DIAGRAM • See page 33 to 36 for IC Block Diagrams.



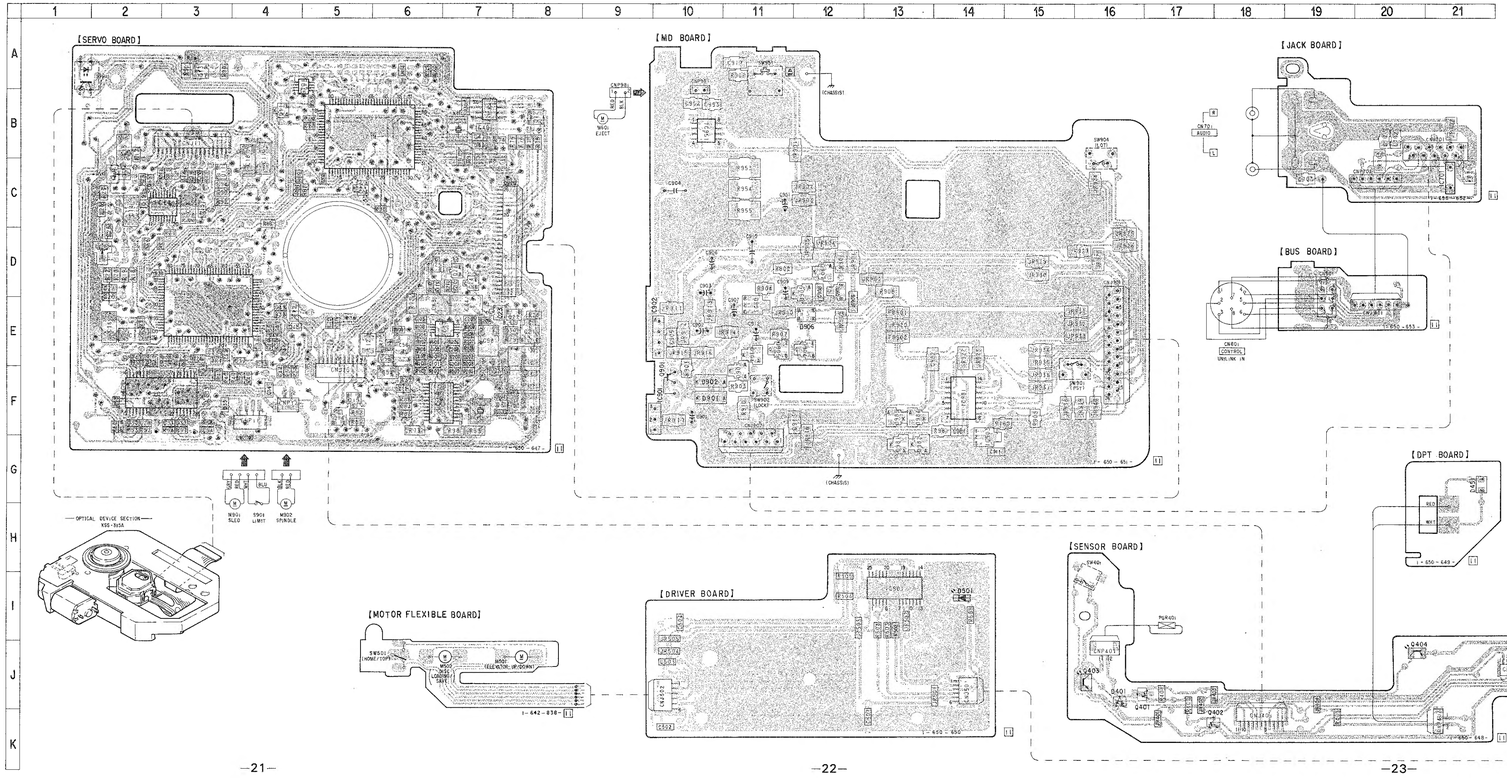
• Circuit Boards Location

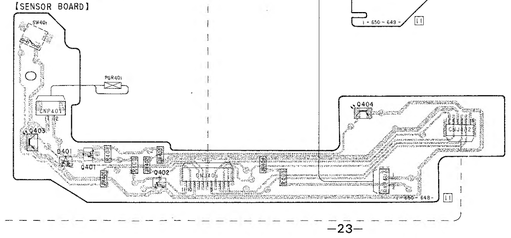
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantaliums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- [ ] : panel designation.
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

Note on Printed Wiring Board:

- o——— : parts extracted from the component side.
- ● : Through hole.
- [illegible]
- [illegible] : Pattern from the side which enables seeing.





• Semiconductor Location

Ref. No.	Location
D11	B-4
D12	C-5
D401	J-16
D451	G-21
D501	I-14
D901	F-10
D902	F-10
D903	F-11
D904	E-11
D905	D-12
D906	E-12
D907	D-12
D981	G-13
D982	G-13
D983	F-13
D984	F-13
IC11	C-2
IC12	D-3
IC13	E-2
IC14	B-5
IC15	A-4
IC16	F-6
IC17	E-6
IC301	B-7
IC501	I-13
IC701	C-21
IC801	F-10
IC802	E-10
IC803	F-14
IC851	B-10
IC981	F-14
PH11	A-1
Q11	C-3
Q12	B-8
Q13	A-9
Q14	F-5
Q15	F-5
Q21	E-8
Q22	E-7
Q23	E-7
Q24	D-7
Q25	D-6
Q26	D-7
Q401	J-16
Q402	K-17
Q403	J-16
Q404	J-20
Q801	F-10
Q802	D-12
Q903	E-11
Q904	E-12
Q905	E-11

• Semiconductor Lead Layouts

BA1405F

MM1176XFF

2SD1417

AN1102W

BA6247FP-Y

PQ09RA1

D8A3A4

BA6267F
TC4W53FU
TLV2362IPW-ELM1500

SM5874AM-ET

EC10DS2

BA6297AFP

TA7605S

SG-223

CXA1571N
LM7001M

TC9240F
μPD75517GF-222-3B9

1SS319 (TE65R)

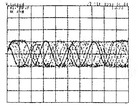
CXD2515Q
CXP82224-015Q

2SB1446

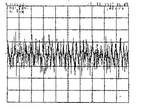
1SV110

• Waveforms

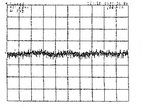
① IC11 ⑰ 0.5V/DIV, 1 μsec/DIV



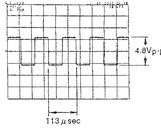
② IC11 ⑭ 0.2V/DIV, 200 μsec/DIV



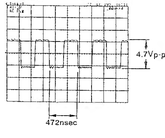
③ IC11 ⑬ 0.2V/DIV, 200 μsec/DIV



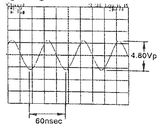
④ IC12 ㉒



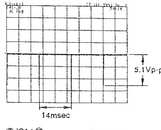
⑤ IC12 ㉑



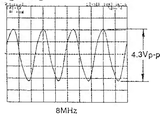
⑥ IC12 ㉔



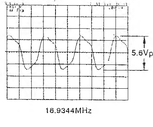
⑦ IC14 ⑪



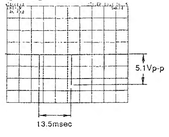
⑧ IC14 ⑩



⑨ IC16 ⑤, ⑥



⑩ IC12 ⑲



5-5. HIDEAWAY SECTION PRNTED WIRING BOARD AND SCHEMATIC DIAGRAM

• See page 36, 37 for IC Block Diagrams.

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D301	A-10	Q101	C-11
D302	B-9	Q102	C-13
D303	D-8	Q103	C-1
D401	I-8	Q201	C-12
D402	H-10	Q202	C-13
D403	H-10	Q203	C-1
D404	E-10	Q301	B-3
D405	C-3	Q303	E-9
D406	J-9	Q304	E-8
D407	I-9	Q305	E-8
D408	H-8	Q306	E-9
D501	F-9	Q307	B-9
D502	H-12	Q308	D-9
D503	J-12	Q309	D-9
D504	J-11	Q401	H-11
D505	H-12	Q402	F-10
D506	I-10	Q403	F-10
D507	J-11	Q404	E-4
D508	H-1	Q405	F-11
D601	G-12	Q406	F-11
D602	G-12	Q407	I-10
D603	F-11	Q408	H-10
D604	F-12	Q409	H-9
D605	F-11	Q412	H-9
D606	F-11	Q501	G-9
D607	B-13	Q502	G-9
D608	B-13	Q503	F-9
		Q601	F-11
IC101	D-11	Q701	H-5
IC301	A-5	Q702	H-5
IC302	B-2		
IC303	E-6		
IC401	H-3		
IC501	F-3		
IC502	G-4		

Note on Printed Wiring Board:

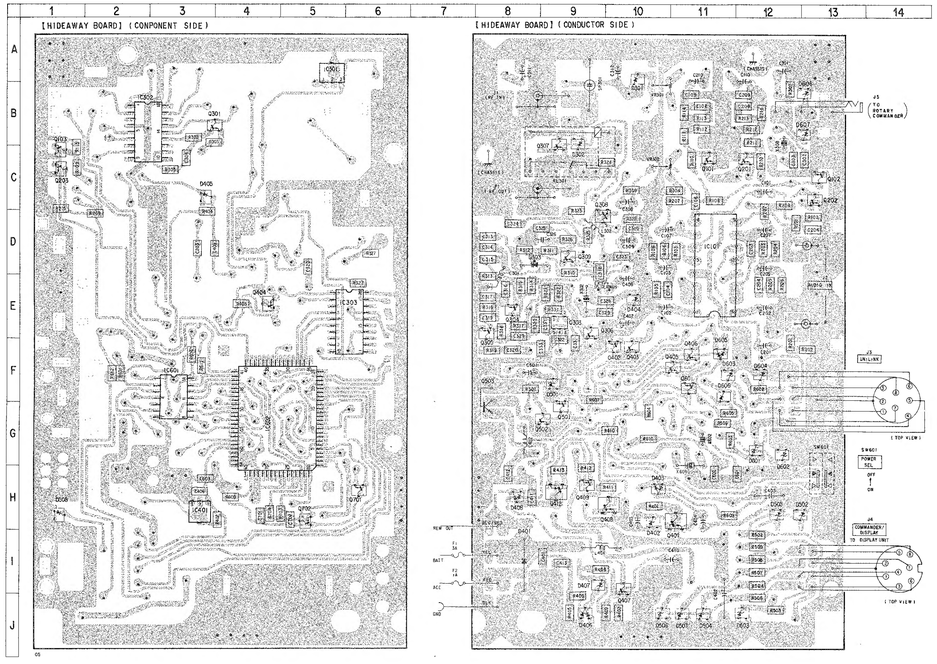
- ○——— : parts extracted from the component side.
- ● : Through hole.
- ■ : Pattern from the side which enables seeing.

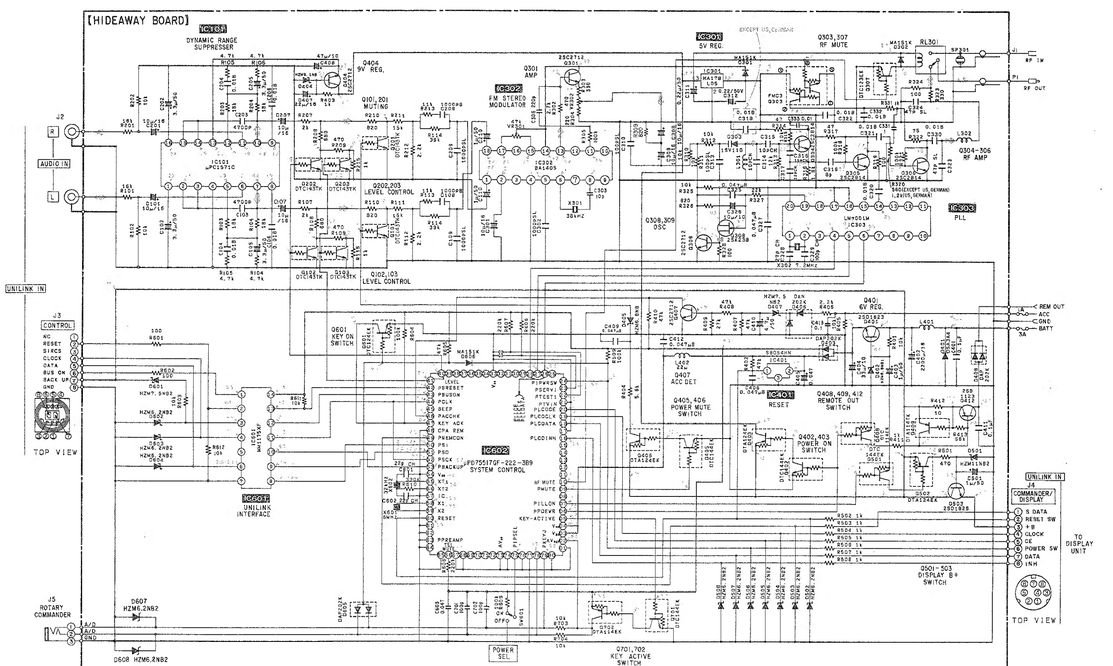
(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

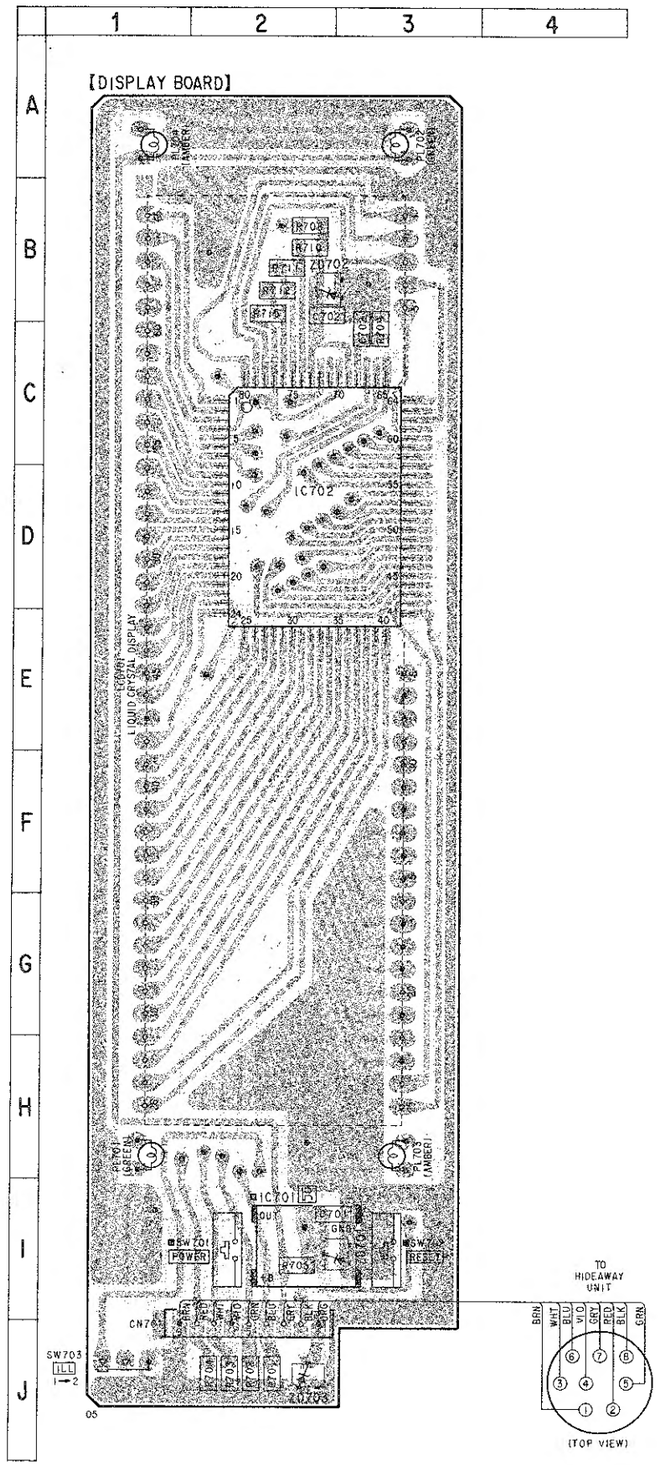
Note on Schematic Diagram:

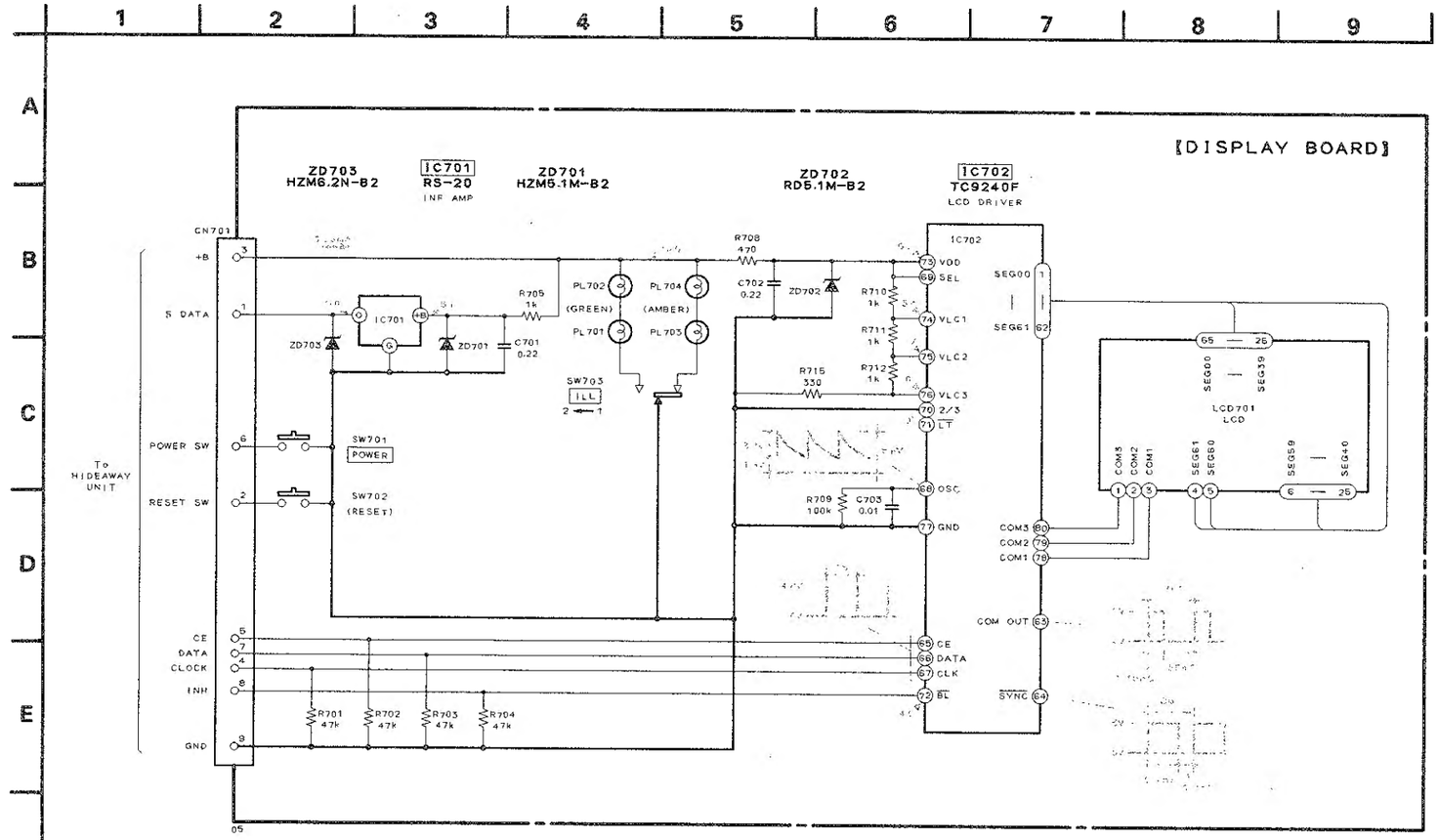
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- f : nonflammable resistor.
- ▭ : panel designation.
- Power voltage is 10.8V and fan with regulated dc power supply from BATT and ACC terminals.
- Voltages and waveforms are dc with respect to ground under no signal conditions.
- Voltages are taken with a VOM (10 MΩ/V).
- Voltage variations may be seen due to various production tolerances.
- Signal path.





5-6. DISPLAY SECTION PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM





• Semiconductor Location

Ref. No.	Location
IC701	I-2
IC702	D-2
ZD701	I-3
ZD702	B-2
ZD703	J-2

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- [illegible] : Signal line.
- ▭ : panel designation.
- Power voltage is dc 14.4 V and fed with regulated dc power supply from BATT and ACC terminals.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ/V). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.

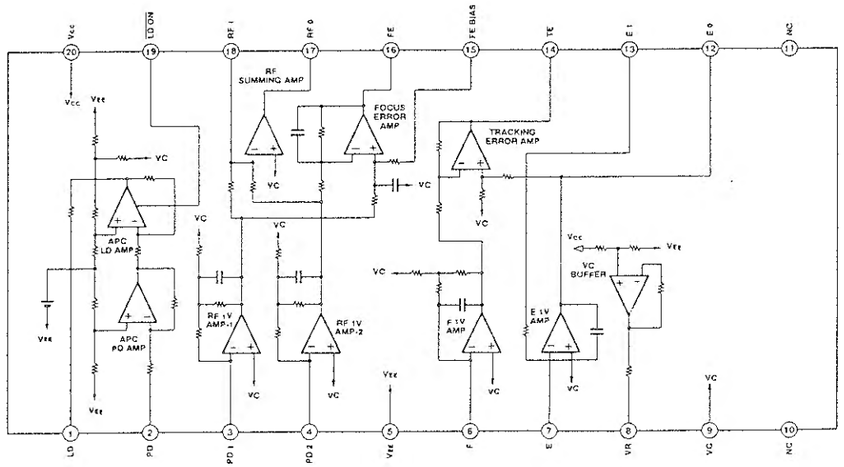
Note on Printed Wiring Board:

- o——— : parts extracted from the component side.
- ▩ : parts mounted on the conductor side.
- ⊕ : Through hole.
- [illegible] : Pattern of the rear side.
- ▒▒▒ : Pattern from the side which enables seeing.

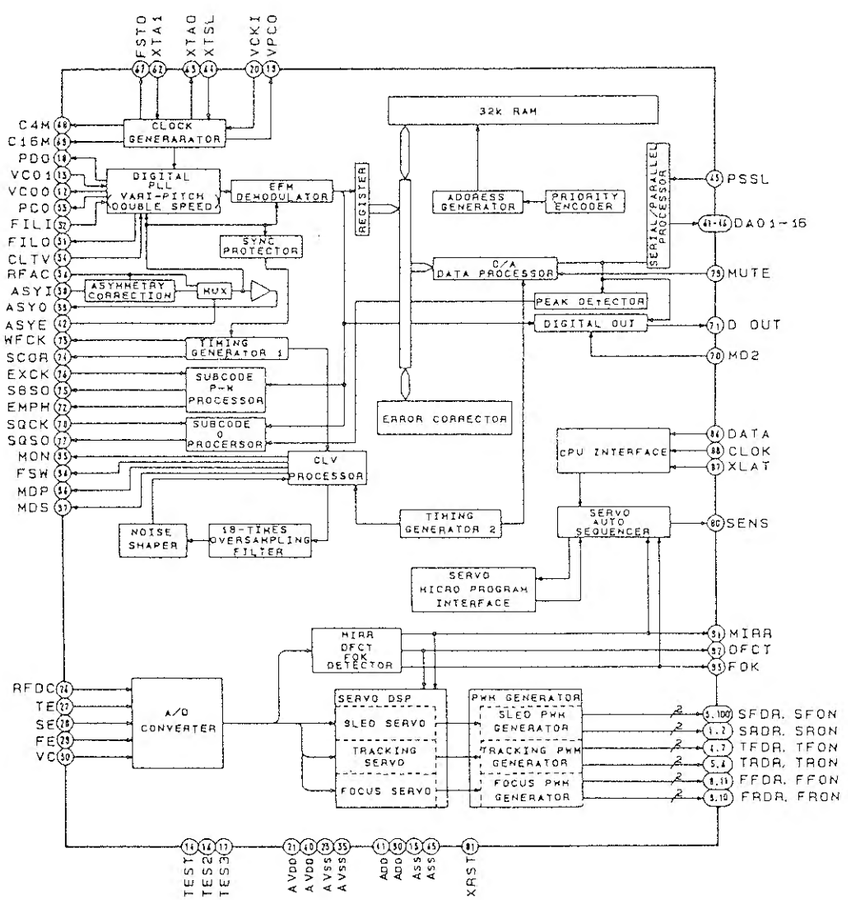
• IC Block Diagrams

[COMPACT DISC CHANGER SECTION]

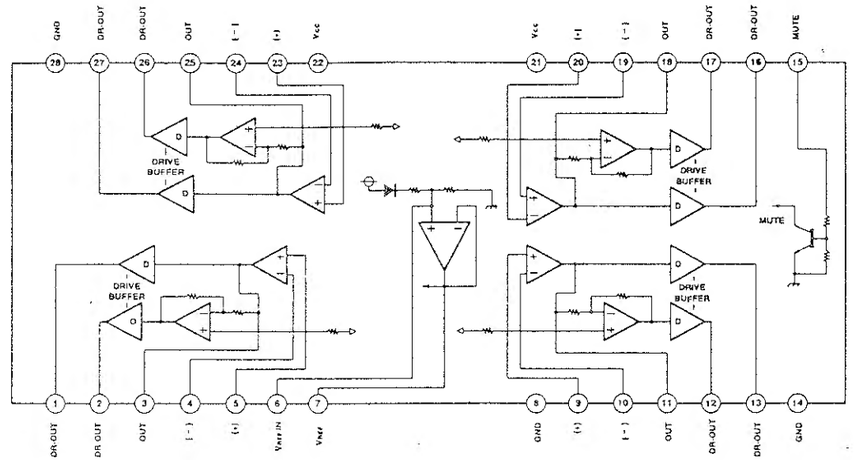
IC11 CXA1571N



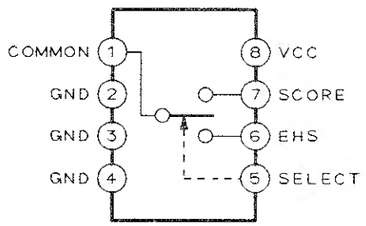
IC12 CXD2515Q



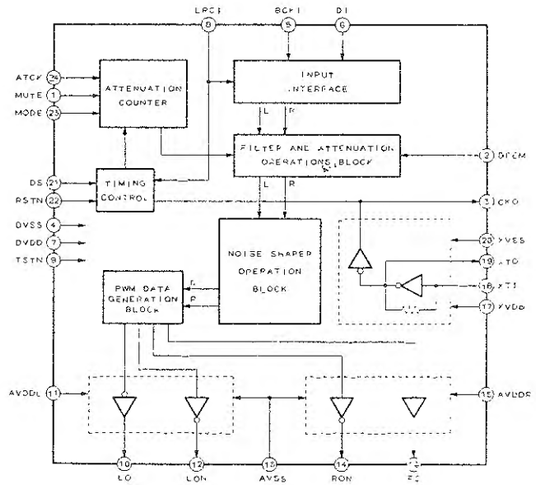
IC13 BA6297AFP



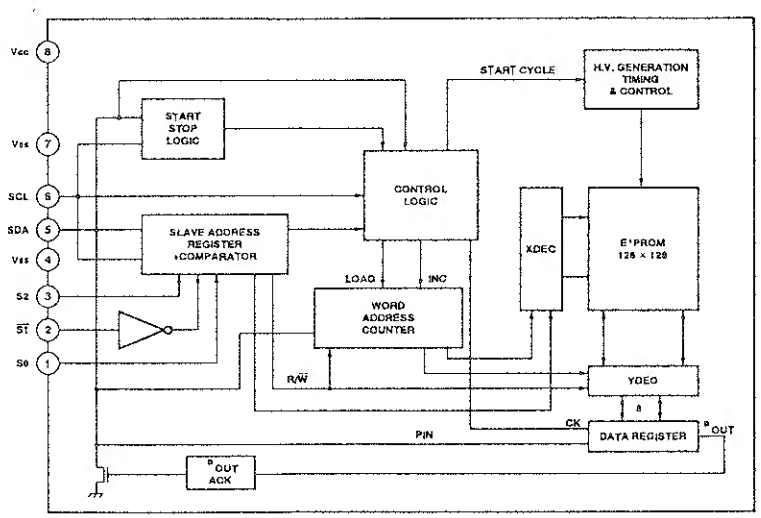
IC15 TC4W53FU



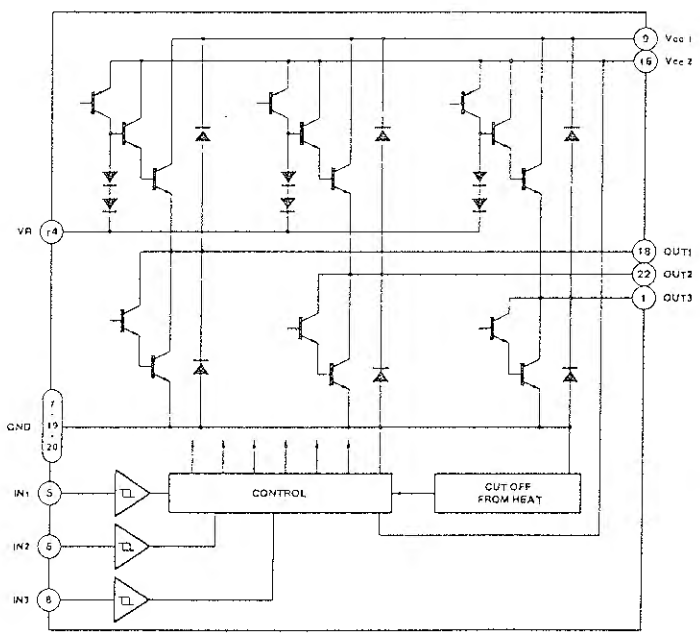
IC16 SM5874AM-ET



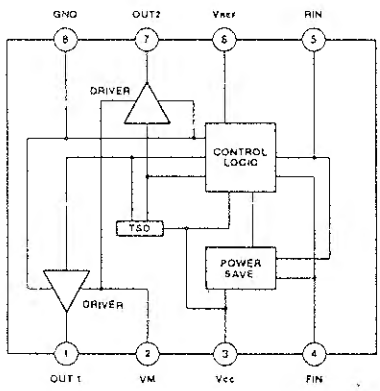
IC301 X24164SIC7000



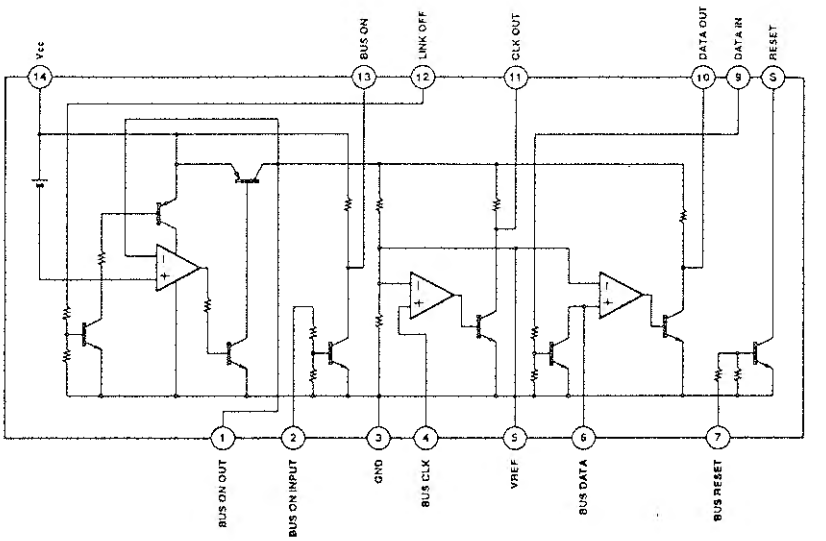
IC501 BA6247FP-Y



IC951 BA6287F

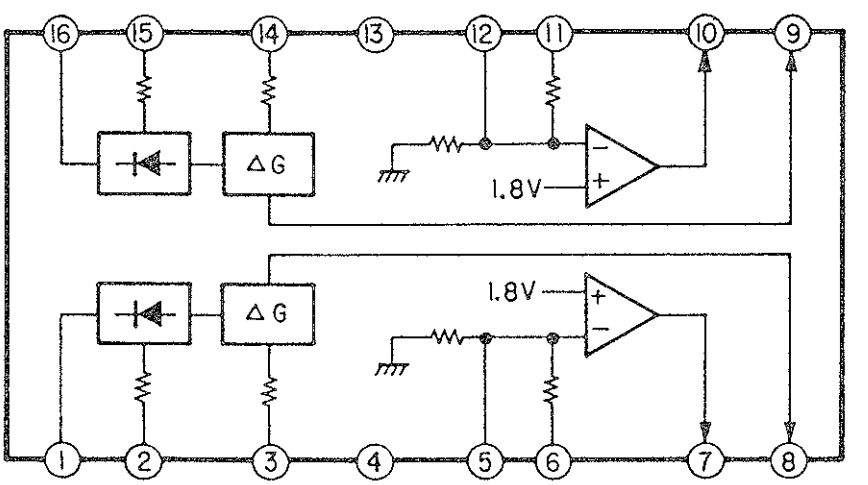


IC981 MM1176XFF

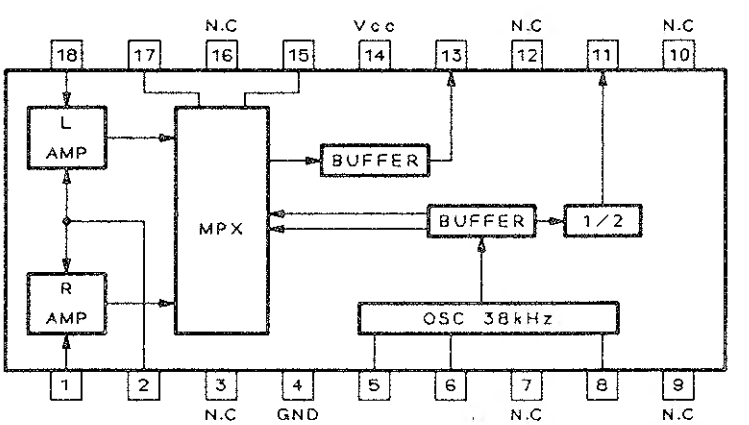


[HIDEAWAY SECTION]

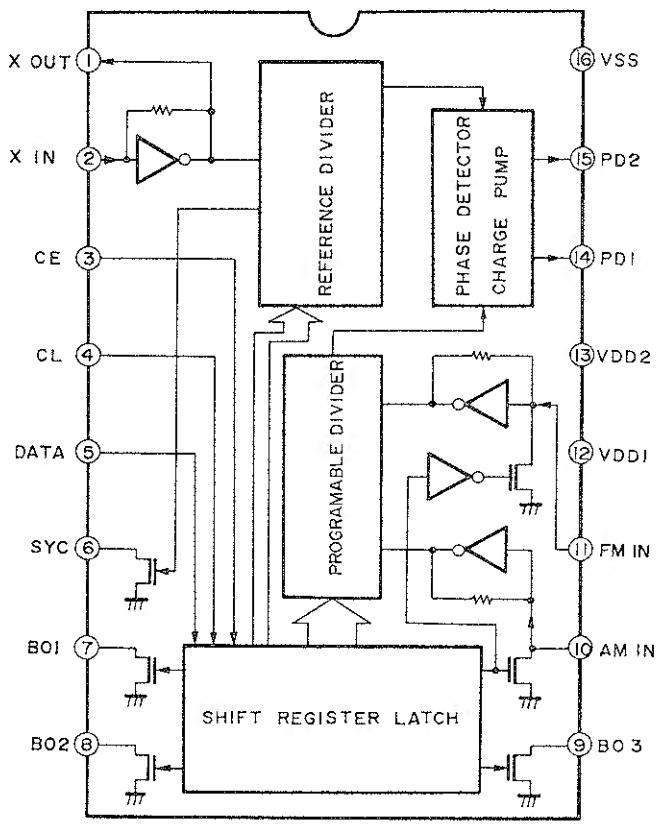
IC101 μPC1571C



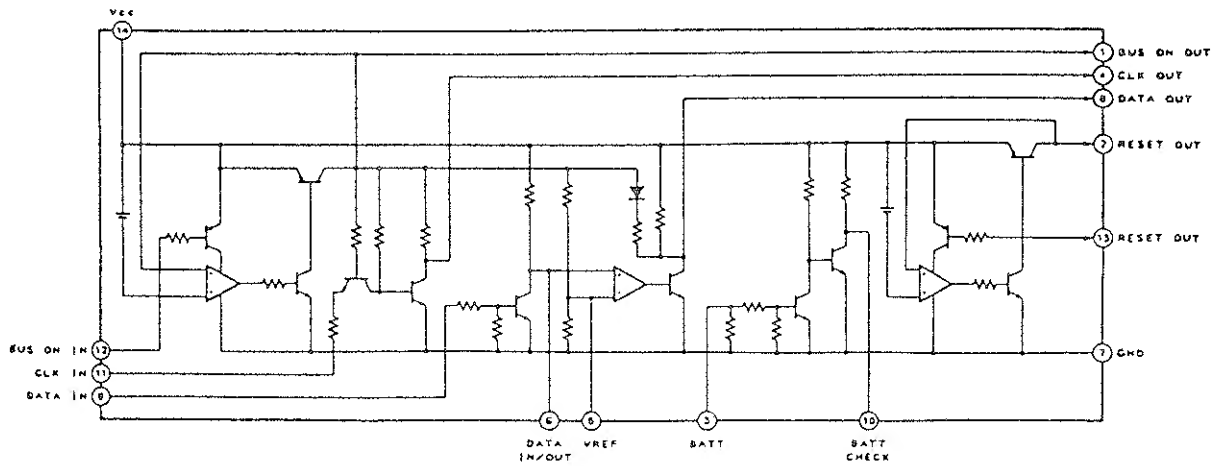
IC302 BA1405F



IC303 LM7001M



IC601 MM1176XF



5-7. IC PIN FUNCTION DESCRIPTION

SERVO BOARD IC14 CXP82224-015Q

Pin No.	P n Name	I/O	Description
1	W UP	I	External event input terminal of timer/counter.
2	LOCK	I	"H" when the magazine is locked
3	EHS/SCORE	I	This terminal detects the height of SCOR/elevator of DSP.
4	EEINIT	I	Input terminal of remote commander reception circuit
5	D. OUT	I	Not used for this unit
6	EECLK	O	Output terminal of 14 bit PWM.
7	REQ	O	Monomorphic wave output terminal of 16 bit timer/counter. CTL duty detection output. Dividing output terminal of 32KHz oscillation
8	EEDATA	I/O	External capture input terminal of 16 bit timer/counter.
9	NC	–	Chip select input terminal of serial interface. Not used for this unit
10	SCK	I	Input terminal of serial clock
11	SI	I	Input terminal of serial data
12	SO	O	Output terminal of serial data.
13	SQCLK	O	Output terminal to clock. SQ to DSP
14	SUBQ	I	Input terminal of SUQB.
15	NC	–	Output terminal of serial data Not used for this unit.
16	EMPH	O	Emphasis control output termina.
17	$\overline{APC}$	O	Laser ON/OFF control termina.. "L" Laser ON
18	CDON	O	Servo system power ON/OFF, "H" : ON
19	CDRST	O	RESET terminal of servo system "L" RESET
20	XEMP	I	Not used
21	XWIH	I	Not used
22	AUTO ON/OFF	I	ON/OFF input for FOCUS BIAS and TRACKING OFFSET automatic adjustment. "L" . OFF "H" ON
23	EJT KEY	I	EJECT KEY input terminal "H" : ON
24	WDSL	O	Not used
25	CHM0	O	Not used
26	CHM1	O	Not used
27	XWRE	O	Not used
28	RST	I	PST sensor input terminal
29	LOT	I	LOT sensor input terminal.
30	XRDE	O	Not used
31	XQOK	O	Not used
32	HOME	I	HOME sensor input terminal
33	DPT	I	DPT sensor input terminal
34	DOE	I	DOE sensor input terminal "L" . when DISC is on the pickup
35	CES	I	CES sensor input terminal "L" . when DISC has completed chucking
36	TEMP L		Not used for this unit
37	TEMP H	I	Detects the high temperature (For servo gain compensation.)
38	$\overline{RESET}$	I	System reset terminal of "L" level active
39	XTLI	I	System clock input terminal
40	XTLO	O	System clock output terminal.

Pin No.	Pin Name	I/O	Description
41	Vss	–	GND terminal.
42	NC	–	Not used for this unit.
43	NC	–	Not used for this unit.
44	DRAM	I	Not used
45	INIT	I	INIT terminal.
46	AVREF	I	Standard voltage input terminal of A/D converter.
47	AVss	–	GND terminal of A/D converter.
48	MC	O	Motor control terminal (M501, M502)
49	MB	O	Motor control terminal (M501, M502)
50	MA	O	Motor control terminal (M501, M502)
51	PGR	O	Plunger control terminal.
52	M3	O	EJECT motor control terminal (M601)
53	$\overline{M3}$	O	EJECT motor control terminal (M601)
54	DTSL	O	Not used
55	ELVON	O	Elevator U/D, sensor power ON/OFF control terminal.
56	SCLK	O	Serial communication clock output terminal.
57	A-MUTE	O	MUTE of audio output.
58	NC	–	Not used for this unit.
59	SELECT	O	EHS/SCOR SELECT terminal.
60	NC	–	Not used for this unit.
61	NC	O	CLD output terminal.
62	NC	O	CK output terminal.
63	NC	O	CD output terminal.
64	TROFF0	–	Not used for this unit.
65	TROFF1	–	Not used for this unit.
66	TROFF2	–	Not used for this unit.
67	TROFF3	–	Not used for this unit.
68	F-BIAS0	–	Not used for this unit.
69	F-BIAS1	–	Not used for this unit.
70	F-BIAS2	–	Not used for this unit.
71	TR -LPF	–	Not used for this unit.
72	NC	–	Not used for this unit.
73	NC	–	Not used for this unit.
74	NC	–	Not used for this unit.
75	NC	–	Not used for this unit.
76	NC	–	Not used for this unit.
77	NC	–	Not used for this unit.
78	NC	–	Not used for this unit.
79	NC	–	Not used for this unit.
80	NC	–	Not used for this unit.

Pin No.	Pin Name	I/O	description
81	NC	–	Not used for this unit.
82	NC	–	Not used for this unit.
83	NC	–	Not used for this unit.
84	NC	–	Not used for this unit.
85	NC	–	Not used for this unit.
86	NC	–	Not used for this unit.
87	NC	–	Not used for this unit.
88	VFDP	–	Voltage supply terminal for EDP when a built-in resistor has been specified by mask option.
89	V_{DD}		Positive power supply terminal.
90	NC	–	NC terminal. This terminal is connected with V_{DD} in normal operation.
91	V_{SS}	–	GND terminal.
92	SINGLE	I	Not used for this unit.
93	FOK	I	FOK input terminal of DSP.
94	GFS	I	GFS input terminal of DSP.
95	SENSE	I	SENSE input terminal of DSP.
96	CDXLT	O	Control output terminal of servo system.
97	CDDATA	O	Control output terminal of servo system.
98	CDCLK	O	Control output terminal of servo system.
99	BUSON	I	"L" when the controller is communicating.
100	BUCHECK	I	BACK-UP detection. "H" : BACK-UP ON

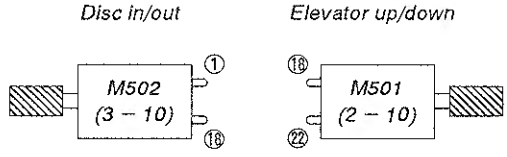
(DRIVER BOARD) IC501 (BA6247FP-Y) MOTOR DRIVER IC OPERATION

The elevator motor connected between Pin ② and Pin ⑩ of IC501 is as M501, and the disc loading/saving motor connected between Pin ③ and Pin ⑩ of IC501 is as M502.
When the IC port logic is Pin ② > Pin ⑩, Pin ③ > Pin ⑩, the rotating direction of M501 and M502 becomes normal.

ROTATION TRUTH TABLE

① When MB = MC, both M501 and M502 are stop. (MA value is free.)
② When MB ≠ MC:

MA Pin ⑧	MB Pin ⑧	MC Pin ⑤	M501	M502	Motor Terminal			Operation
					㉒	①	⑱	
L	L	H	Reverse	Stop	L	OPEN	H	Elevator UP
H	L	H	Normal	Stop	H	OPEN	L	Elevator DOWN
L	H	L	Stop	Reverse	OPEN	L	H	Disc load
H	H	L	Stop	Normal	OPEN	H	L	Disc save



HIDEAWAY BOARD IC602 μPD75517GF-222-3B9

Pin No.	Port No.	Port Name	(I/O)	Description
1	AN0	KEY	I	AD BUTTON INPUT
2	AVREF		–	REFERENCE POWER SUPPLY
3	VDD		–	POWER SUPPLY
4	VDD		–	POWER SUPPLY
5	P113	KEY ACTIVE	O	POWER ON/$\overline{\text{OFF}}$ FOR AD BUTTON
6	P112	POWER	O	USED FOR REMOTE OUT
7	P111	ILLUMI	O	POWER SUPPLY ON/$\overline{\text{OFF}}$ TO DISPLAY UNIT
8	P110	COLOR	O	COLOR SELECTION PORT $\overline{\text{AMBER}}$/GREEN (OPEN)
9	P103	MUTE	O	MUTE PORT ON/$\overline{\text{OFF}}$ ON SOURCE SELECTION
10	P102	RF MUTE	O	RF MUTE
11	P101		O	NOT USED. (OPEN)
12	P100		O	NOT USED. (OPEN)
13	P93	REM_ANT	O	OUTPUT PORT FOR REMOTE ANTENNA (OPEN)
14	P92		O	NOT USED. (OPEN)
15	P91		O	NOT USED. (OPEN)
16	P90	LCD INH	O	INH FOR LCD
17			I	NOT USED. (OPEN)
18	SO1	LCD DATA	O	DATA FOR LCD
19	$\overline{\text{SCK1}}$	LCD CLK	O	CLOCK FOR LCD
20	PPO	LD CE	O	CE FOR LCD
21	P73	REP-KEY	I	$\overline{\text{THERE IS REP-KEY}}$/NOT INITIAL IN (VDD)
22	P72	PTEST1	I	TEST MODE INITIAL IN $\overline{\text{NOR}}$/TEST
23	P71	RSERV1	I	SERVICE MODE INITIAL IN $\overline{\text{NOR}}$/TEST
24	P70	MATCH	I	NOT USED. (GND)
25	P63		O	NOT USED. (OPEN)
26	P62	PLL DATA	O	PLL DATA
27	P61	PLL CLK	O	PLL CLK
28	P60	PLL CE	O	PLL CE
29	P53		O	NOT USED. (OPEN)
30	P52		O	NOT USED. (OPEN)
31	P51		O	NOT USED. (OPEN)
32	P50		O	NOT USED. (OPEN)
33	VSS		–	GND
34	P43		O	NOT USED. (OPEN)
35	P42		O	NOT USED. (OPEN)
36	P41		O	NOT USED. (OPEN)
37	P40		O	NOT USED. (OPEN)
38	P33		O	NOT USED. (OPEN)
39	P32		O	NOT USED. (OPEN)
40	P31	LEVEL	O	OUTPUT LEVEL SELECT

Pin No.	Port No.	Port Name	(I/O)	Description
41	P30	LEVEL	O	OUTPUT LEVEL SELECT
42	P23	RESET OUT	O	UNI LINK RESET PORT
43	P22	$\overline{\text{BUS ON}}$	O	UNI LINK BUS ON
44	P21	SCLK OUT	O	UNI LINK CLK OUT
45	P20	BEEP	O	BEEP (KEY ON BEEP) OUT (OPEN)
46	P13	ACC CHECK	I	ACC CHECK IN
47	P12	KEY ACK	I	AID INPUT BUTTON ON: HIGH
48	P11	CAS_REM	I	CASSETE REMOTE IN (GND)
49	P10	SIRCS	I	SIRCS INPUT FOR REMOTE COMMANDER RECEIVER
50	SI0	SI	I	UNI LINK DATA IN
51	SO0	SO	O	UNI LINK DATA OUT
52	$\overline{\text{SLK0}}$	SCLK IN	I	UNI LINK CLK IN
53	P00	B.U CK	I	PORT FOR BACK-UP CHECK
54	Vss		–	GND
55	XT1		O	CLOCK OUT (32kHz)
56	XT2		I	CLOCK IN (32kHz)
57	IC		I	(GND)
58	X1		O	CLOCK OUT (4.19 MHz)
59	X2		I	CLOCK IN (4.19 MHz)
60	RESET		I	RESET IN
61	P143		I	NOT USED. (OPEN)
62	PI42		I	NOT USED. (OPEN)
63	PI41		I	NOT USED. (GND)
64	P140		I	NOT USED. (GND)
65	P133		I	NOT USED. (GND)
66	P132	$\overline{\text{TEL MUTE}}$	I	TELEPHONE MUTE (V_{DD})
67	P131		I	NOT USED. (GND)
68	P130		I	NOT USED. (GND)
69	P123		O	NOT USED. (OPEN)
70	P122		O	NOT USED. (OPEN)
71	P121		O	NOT USED. (OPEN)
72	P120		O	NOT USED. (OPEN)
73	AVss		–	GND
74	P153		I	NOT USED. (GND)
75	P152	P/S SW	I	POWER SELECT SW $\overline{\text{THERE IS ACC/NOT}}$
76	P151		I	NOT USED. (GND)
77	P150		I	NOT USED. (GND)
78	AN3		I	NOT USED. (GND)
79	AN2		I	NOT USED. (GND)
80	AN1		I	NOT USED. (GND)